The normal mode to local mode transition has been described in the past by basic arguments centered on symmetry and on perturbative-type numerical quantum mechanical calculations $^{ab}$. In this work we investigate the absorption and Vibrational Circular Dichroism (VCD) spectra for a two degrees of freedom model of an HCCH chiral fragment endowed with $C_2$-symmetry, for the fundamental ($\Delta v=1$) and first two overtone regions ($\Delta v=2,3$). We include electrical anharmonicity $^c$ in addition to mechanical anharmonicity, and deal with them in the framework of the Van Vleck contact transformation theory $^{de}$. By making use of an algebraic manipulator (Maple) we are able to derive useful analytical expressions for frequencies, dipole strengths and rotational strengths for $\Delta v=1,2,3$.

$^{d}$G. Amat, H.H. Nielsen, G. Tarago, Rotation-Vibration in Polyatomic Molecules, M. Dekker, NY,(1971)